



AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1-20. (Canceled)

21. (Previously presented) A method of deriving an embryonic stem (ES) cell line in a substantially undifferentiated state from an ES cell population said method comprising:
obtaining an ES cell population comprising undifferentiated ES cells; and
culturing the undifferentiated ES cells on a cell support matrix in the presence of soluble factors derived from human feeder cells or equivalents thereof.

22. (Previously presented) A method according to claim 21 wherein deriving an ES cell line is selected from the group including creating an ES cell line from a source of ES cells and wherein the ES cells are previously uncultured cells; extending propagation or culturing time of an ES cell line wherein the ES cell line is an established cell line; and propagating an established ES cell line.

23. (Previously presented) A method according to claim 22 wherein the deriving of the ES cell line includes propagating an ES cell line.

24. (Previously presented) A method according to claim 21 wherein the ES cell population is derived from a source selected from the group including an embryo, blastocyst, inner cell mass (ICM) cells, and a culture of ES cells which have not differentiated.

25. (Previously presented) A method according to claim 24 wherein the source is from a blastocyst.

26. (Previously presented) A method according to claim 21 wherein the soluble factors are derived from human feeder cells selected from the group including human adult, fetal or embryonic cells or a combination thereof.

27. (Previously presented) A method according to claim 26 wherein the human adult cell is selected from the group including human fibroblast cells, human adult skin and human adult muscle fibroblasts and adult epithelial cells or a combination thereof.

28. (Previously presented) A method according to claim 27 wherein the human adult cell is a human fibroblast cell.

29. (Previously presented) A method according to claim 27 wherein the human fibroblast cell is a human adult fallopian tubal (HAFT) fibroblast cell.

30. (Previously presented) A method according to claim 27 wherein the human adult cell is a human skin cell.

31. (Previously presented) A method according to claim 27 wherein the human adult cell is a human muscle cell.

32. (Previously presented) A method according to claim 27 wherein the human adult cell is a human adult epithelial cell.

33. (Previously presented) A method according to claim 27 wherein the human adult cell is a human oviductal epithelial fibroblast.

34. (Previously presented) A method according to claim 26 wherein the human fetal cell is a human fetal muscle (HFM) or human fetal skin (HFS) cell or combination thereof.

35. (Previously presented) A method according to claim 34 wherein the human fetal cell is a HFM cell.

36. (Previously presented) A method according to claim 34 wherein the human fetal cell is a HFS cell.

37. (Previously presented) A method according to claim 26 wherein the human embryonic cell is a human embryonic muscle (HEM) or human embryonic skin cell or combination thereof.

38. (Previously presented) A method according to claim 37 wherein the human embryonic cell is a HEM cell.

39. (Previously presented) A method according to claim 37 wherein the human embryonic cell is a human embryonic skin cell.

40. (Previously presented) A method according to claim 21 wherein the human feeder cells are cultured in the presence of a medium selected from a group including HES, KO, HF, HES-HS, KO-HS, and HF-HS as hereinbefore described.

41. (Previously presented) A method according to claim 40 wherein the medium is HES-HS or KO-HS.

42. (Previously presented) A method according to claim 41 wherein the medium is KO-HS.

43. (Previously presented) A method according to claim 21 wherein the cell support matrix is a non-cellular cell support matrix selected from the group including Collagen I, Collagen IV, human extracellular matrix or Matrigel or a combination thereof.

44. (Previously presented) A method according to claim 43 wherein the cell support matrix comprises Collagen I or Type I Collagen.

45. (Previously presented) A method of deriving an embryonic stem (ES) cell line in a substantially undifferentiated state from an ES cell population said method comprising:

obtaining an ES cell population comprising undifferentiated ES cells;

and culturing the undifferentiated ES cells on a cell support matrix in the presence of soluble factors derived from human feeder cells or equivalents thereof, wherein the cell support matrix comprises a human feeder cell layer according to claim 1 or 2.

46. (Previously presented) A method according to claim 45 wherein the ES cells are cultured in the presence of a medium selected from the group including HES, KO, HES-HS, KO-HS and HF-HS as hereinbefore described.

47. (Previously presented) A method according to claim 46 wherein the medium is KO-HS.

48. (Previously presented) A method according to claim 45 wherein the feeder cells are first established in primary cultures in the presence of HFE medium, as hereinbefore described.

49. (Previously presented) A method according to claim 45 wherein the feeder cells are propagated in the presence of a HM medium prior to culture with ES cells, as hereinbefore described.

50. (Previously presented) A method according to claim 45 wherein the human feeder cell is the fibroblast cell line Detroit 551 (ATCC NO CCL-110).

51. (Previously presented) A method according to claim 45 wherein the human feeder cell is the cell line MRC-5 having Accession Number ATCC No. X-55 or ATCC No CCL 171.

52. (Previously presented) A method according to claim 45 wherein the human feeder cell is the cell line WI-38 having Accession Number ATCC-CCL-75 or ATCC-CCL-75.1.

53. (Previously presented) A method according to claim 45 wherein the ES cell line is cultured in the absence of LIF.

54. (Previously presented) A cellular composition comprising proliferating undifferentiated ES cells and wherein the cell composition comprises the propagated or derived ES cells prepared by the methods according to claim 21.

55. (Previously presented) An undifferentiated ES cell line prepared by a method according to claim 21.

56. (Previously presented) A cell culture system for deriving and culturing ES cells in a substantially undifferentiated state, said culture system including:
a cell support matrix; and

a cell culture medium for providing soluble factors derived from a human feeder cell selected from the group including a human adult, fetal or embryonic cell.

57. (Previously presented) A cell culture system according to claim 56 wherein the human adult cell is selected from the group including human adult fallopian tubal (HAFT) fibroblast cells, human adult skin and human adult muscle fibroblasts and adult epithelial cells or a combination thereof.

58. (Previously presented) A cell culture system according to claim 57 wherein the human adult cell is a human fibroblast cell.

59. (Previously presented) A cell culture system according to claim 57 wherein the human adult cell is a human adult fallopian tubal (HAFT) fibroblast cell.

60. (Previously presented) A cell culture system according to claim 57 wherein the human adult cell is a human skin cell.

61. (Previously presented) A cell culture system according to claim 57 wherein the human adult cell is a human muscle cell.

62. (Previously presented) A cell culture system according to claim 57 wherein the human adult cell is a human adult epithelial cell.

63. (Previously presented) A cell culture system according to claim 57 wherein the human epithelial adult cell is a human oviductal epithelial cell.

64. (Previously presented) A cell culture system according to claim 56 wherein the human fetal cell is a human fetal muscle (HFM) or human fetal skin (HFS) cell or combination thereof.

65. (Previously presented) A cell culture system according to claim 64 wherein the human fetal cell is a HFM cell.

66. (Previously presented) A cell structure system according to claim 64 wherein the human fetal cell is a HFS cell.

67. (Previously presented) A cell culture system according to claim 56 wherein the human embryonic cell is a human embryonic muscle (HEM) or human embryonic skin cell or combination thereof.

68. (Previously presented) A cell culture system according to claim 67 wherein the human embryonic cell is a HEM cell.

69. (Previously presented) A cell culture system according to claim 67 wherein the human embryonic cell is a human embryonic skin cell.

70. (Previously presented) A cell culture system according to claim 56 wherein the cell support matrix comprises Collagen I or matrigel or a combination thereof.

71. (Previously presented) A cell culture system according to claim 70 wherein the cell support matrix comprises Collagen I.

72. (Previously presented) A cell culture system according to claim 56 wherein the cell culture medium is a conditioned medium including soluble factors derived from a human feeder cell layer.

73. (Previously presented) A cell culture system for deriving and culturing ES cells in a substantially undifferentiated state, said culture system including:

a cell matrix; and

a cell culture medium for providing soluble factors derived from a human feeder cell selected from the group including a human adult, fetal or embryonic cell, wherein the cell support matrix comprises a human feeder cell layer according to claim 1 or 2.

74. (Previously presented) A cell culture system according to claim 56 wherein the culture medium is selected from the group including HES, KO, HES-HS, and KO-HS.

75. (Previously presented) A cell culture system according to claim 74 wherein the medium is KO-HS.

76. (Currently amended) A conditioned medium for deriving and culturing an ES cell line in a substantially undifferentiated state, said medium prepared by a method including:

obtaining a feeder cell layer ~~according to claim 1 or 2~~ which supports the derivation and/or culture of ES cells in a substantially undifferentiated state, wherein said feeder cell layer comprises cells selected from the group consisting of human adult cells, human fetal cells, human embryonic cells, and a combination thereof;

culturing the feeder cells in the presence of a medium selected from the group ~~including~~ consisting of HES, KO, HES-HS, KO-HS, HFE, HM, HF ~~or~~ and HF-HS; and

separating the medium from the cells to obtain conditioned medium.

77-78. (Canceled)

79. (Currently amended) ~~A~~ The conditioned medium according to claim 76 wherein the medium comprises KO-HS.

80. (New) The conditioned medium of claim 76, wherein the human adult cell is selected from the group consisting of human fibroblast cells, human adult skin cells, human adult muscle fibroblasts, human adult epithelial cells, and a combination thereof.

81. (New) The conditioned medium of claim 80, wherein the human adult cell is a human fibroblast cell.

82. (New) The conditioned medium of claim 81, wherein the human fibroblast cell is a human adult fallopian tubal (HAFT) fibroblast cell.

83. (New) The conditioned medium of claim 80, wherein the human adult cell is a human skin cell.

84. (New) The conditioned medium of claim 80, wherein the human adult cell is a human muscle cell.

85. (New) The conditioned medium of claim 80, wherein the human adult cell is a human adult epithelial cell.

86. (New) The conditioned medium of claim 85, wherein the human adult epithelial cell is a human oviductal epithelial cell.

87. (New) The conditioned medium of claim 76, wherein the human fetal cell is a human fetal muscle (HFM) cell, a human fetal skin (HFS) cell, or combination thereof.

88. (New) The conditioned medium of claim 87, wherein the human fetal cell is a HFM cell.

89. (New) The conditioned medium of claim 87, wherein the human fetal cell is a HFS cell.

90. (New) The conditioned medium of claim 76, wherein the human embryonic cell is a human embryonic muscle (HEM) cell, human embryonic skin cell, or combination thereof.

91. (New) The conditioned medium of claim 90, wherein the human embryonic cell is a HEM cell.

92. (New) The conditioned medium of claim 90, wherein the human embryonic cell is a human embryonic skin cell.

93. (New) The conditioned medium of claim 76, wherein said feed cell layer is first established in a primary culture in the presence of HFE medium.

94. (New) The conditioned medium of claim 76, wherein the feeder layer is propagated in the presence of a HM medium.

95. (New) The conditioned medium of claim 76, wherein the feeder layer comprises fibroblast cell line Detroit 551 (ATCC NO CCL-110).

96. (New) The conditioned medium of claim 76, wherein the feeder layer comprises cell line MRC-5 having accession Number ATCC No. X-55 or ATCC No. CCL-171.

97. (New) The conditioned medium of claim 76, wherein the feeder layer comprises cell line WI-38 having Accession Number ATCC NO CCL-75 or ATCC NO CCL-75.1.

98. (New) A kit for deriving and culturing an ES cell line in a substantially undifferentiated state, comprising the conditioned medium of claim 76 and a cell support matrix.

99. (New) The kit of claim 98, wherein said cell support matrix comprises Collagen I, matrigel, or a combination thereof.

100. (New) The kit of claim 99, wherein the cell support matrix comprises Collagen I.